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*Session 1*

# Digital libraries: Can we deliver them without open access?

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In the early 1990s, I visited the beautiful island and town of Ambon in the fabled Spice Islands of eastern Indonesia. At the Institute of Marine Sciences of Universitas Pattimura, the Librarian told me that she had not been able to buy a journal for 13 years. That situation rendered it impossible to provide any effective support for critically important research. It stopped dedicated library staff from supportive research of both ecological and commercial significance in that rich environment for marine life which was being heavily exploited by trawlers from Taiwan and Japan. A dozen years on, I doubt that our colleagues at Pattimura would have been able to buy any more titles in the face of the economic challenges faced by Indonesia, the collapse of the rupiah and the increasing cost of serials, not to mention the dreadful sectarian violence which has destroyed the university.

This vignette provides a useful starting point for this paper in reminding us that our mission is to provide information access to all to enable researchers to research, students to study, businesses to prosper, and all to pursue their interests. It is not just a privilege for those of us in rich countries but a right to be enjoyed by all the world's peoples. It provides a litmus test for our discussion of digital libraries today and tomorrow: if digital libraries are to work, then they must work for peoples across societies and across the globe.

## Digital libraries

What do we mean by digital libraries? In the narrowest sense the digital or virtual library, or even 'cybrary'[1], can be considered to be merely an "online repository of electronic texts" (*A dictionary of the Internet* 2001) or "electronic stock of information which can be accessed via databases" (*Dictionary of library and information management* 1997). Both of these definitions focus on storage and access to content but miss the other dimensions of a library. "A system providing the services of a library in digital form" (*The dictionary of human geography* 2000) offers an alternative definition which better describes a library operating electronically. It is based on bibliographic, factual and fulltext databases, the application of powerful inquiry technologies, and their linkage through complex communications networks. The library or information service has come to be considered as a node in a network designed to provide immediate access to information - with little of no interest in the physical format in which it might be conveyed. It is a library model adapted for a world in which "we're all connected" (Ginsburg 1993).

In this new, digitally mediated model, professional skills have extended to encompass the management of licensed access to remotely located resources and of the technological infrastructure required to connect clients to those resources so that they might use them. The librarian becomes facilitator, navigator and mentor (Cullen 2001). Due to the complexity of resources and their interfaces, extension of clients' information literacy has become a crucial concern (Prinsen 2001); (Clyde 2002). In contrast to the earlier access paradigm, the connected paradigm stresses information retrieval rather than the preparation of materials for information access. That preparatory work is generally outsourced to database creators and aggregators. There is little or no concern with the object but rather an emphasis on the professional skills of librarians and the function of the library in communication rather than as a physical storehouse for physical objects (Gapen 1993).

In this discussion I shall concentrate on examples from the area I know best, academic and research libraries, but will also relate the issues to other types of libraries and information services which are also engaging with the connected paradigm. Those which are perhaps furthest along the road to digital nirvana are corporate information services, many of which are facing the challenge to deliver high quality and very time critical services to nationally or globally distributed clients. University and research institute libraries are perhaps the next most advanced in these developments and face similar challenges but also need to access considerable resources in physical, especially, printed, formats. Some have heritage responsibilities for significant collections, a characteristic which they share with state and national libraries, which are also engaging with these issues. Despite limited resources, public libraries are striving to provide their clients with access to digital information while continuing to provide a wealth of materials in other formats. School libraries are providing access to the Internet and through it to some specialised resources but

The key features which we usually associate with digital libraries include:

[1] "The University of Queensland Library uses the term *Cybrary* to describe its integration of cyberspace and physical space." (University of Queensland Library 2002)

- **Content** – usually digital versions of journals – converted from printed origins or 'born digital' – but also including other digital resources such as business or clinical data; usually held on remote servers but sometimes locally mounted.
- **Search interfaces** – often proprietary – extending from basic keyword based, 'Google-like' query modes to advanced with specialised features.
- **Explode features** – to find similar results, follow citation trails, etc.
- **Access software** – to open up the full content – be it full text articles or other datasets.
- **Authentication and authorisation mechanisms** – to limit access to those with permissions resulting from their status, location or payment.

This set of features constitutes a sophisticated content access system, similar in intent to the shelf-arranged collections of printed books, journals and other resources which we have been accustomed to access through classification and cataloguing systems and use through borrowing, photocopying, interlending rather than through computer screens and printers. But it is far from a library. If the term 'digital library' is to have any meaning, it must extend beyond a content access system to encompass the other features of a library.

To take the example of the UTS:Library: we certainly do deliver an enormous number of resources digitally. They include 16,597 current individual serial titles delivered online out of the total 20,984 titles we offer plus an increasing number of e-books - 12,311 were recently loaded from Ebrary, a cross disciplinary e-book collection. Those e-resources as available as any of the physical resources, if not more so: they are all hot linked from the UTS:Library catalogue and available 24 hours a day, 7 days a week from any Internet connected location. But we also offer an extensive range of services online including both email and online real time reference, information literacy training, guides to the literature in the various fields of interest to UTS students, digital student readings, and "MyLibrary" portal features. Electronic services extend to the physical collections, of course, enabling clients to identify desired items, reserve them, request them from other campuses, extend loans, etc. We are about to begin a trial of unmediated client requesting across the collections of four university libraries (Newcastle, New South Wales, UTS and Charles Sturt). This I believe constitutes a digital library. It is anything but virtual since it offers a comprehensive range of services digitally to our clients whether they be located on campus, next door in a flat in Pyrmont or a continent away in Shanghai.

It is clear from our experience at UTS and that of others that such digital libraries could, for the first time, offer in effect a global library to the peoples of the world by interlinking the worldwide network of libraries and information services. Unlike the treasure house of knowledge to which the Alexandrian Library and its successors aspired, this would be a constantly changing matrix of global information resources which all could access to explore their heritage, find scientific and technical information and take imaginative wings.

**Constraints on the digital library**

However, as we are all aware, creation of this universal and universally available library is much easier said than done. The wealth of resources available to UTS:Library's clients falls well short of universal knowledge and fails even to provide *everything* they want although we come very close and can usually supply the remainder through interlending and other arrangements. But few people, even among library users, are in the privileged position enjoyed by our clients. Most are closer to the position of our unfortunate colleagues in Ambon. Even in a rich country like Australia, perhaps only the 5% of the population associated with universities and research institutes enjoy the extensive access we offer. Those working in health, education, law, government and commercial areas may have access to specific resources of relevance to their fields of practice but are unlikely to have broad access. The general public has even less access than its members enjoyed in the print world due to the limits imposed by licences for e-resources.

Most people around the world face many barriers to accessing the digital library. In many regions barriers of particular concern include:

- **Inadequate or non-existent Internet access** in most areas of developing nations and even in some parts of richer nations.
- **Lack of hardware, software and expertise** to access digital information.
- **Language barriers** since most digital information is in the languages of international trade, especially English.
- **Low levels of literacy and information literacy** which hamper the use of resources even when they may be available.
- **Lack of relevant content** for many peoples – their cultures and concerns are not described, and certainly not in their own terms.
- **Licensing or other contractual** inhibitions – UTS:Library, for example has negotiated 'walk-in' access to many e-resources for community members but cannot offer them the same levels of access we offer to our primary clients within the University.

The long list of barriers to access, which can appear insurmountable, are identified in the *Declaration of Principles* agreed at last December's World Summit on the Information Society (WSIS 2003a). The accompanying *Plan of Action* (WSIS 2003b) sets out an agenda, albeit imperfect, for addressing them. IFLA has produced a commentary which identifies the correspondences between the issues identified in those documents and the solutions which we in libraries and information services are pursuing (IFLA 2004). It is important to do so because in many countries these constraints collude to make access to high quality scholarly information virtually impossible. It becomes impossible to research even local topics from the same basis in knowledge as those in richer countries, it becomes impossible to provide timely access to the knowledge needed for health and education, it becomes impossible to control and exploit one's own knowledge.

Librarians are thus faced with a moral imperative to fulfil our professional commitment to access for all while wrestling with these major issues within our own countries and beyond.

**The open access movement**

A promising approach, which is of particular relevance to this Conference's theme, is the so called open access movement which has gained force thanks to the commitment and energy of a growing number of advocates, especially Stevan Harnad (http://www.ecs.soton.ac.uk/~harnad/intpub.html) and the Scholarly Publishing and Research Coalition (SPARC) which is supported by the Association of Research Libraries (http://www.arl.org/sparc), and those who have been addressing many of the issues associated with an open approach to digital publishing, access to digital information and, hence, digital libraries. It has been codified in the Budapest Open Access Initiative (Open Society Institute 2001) and the *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities* (2003).

This initiative has developed in response to high levels of concern on the one hand and recognition of new opportunities on the other. The concerns focus on the concentration of corporate ownership of scholarly publications, the rapidly growing costs of those publications and the loss of control experienced by the global scholarly community over the knowledge and information which its members generate, quality assure and use to inform their scholarship and stimulate new findings. Besides the serious implications for libraries arising from the continuing escalation in the cost of commercially produced scholarly journals, many scholars are perturbed by the treatment of their articles as commodities which are valued for their commercial return rather than their intrinsic worth to scholarship. New opportunities are enabling the academy to reclaim its scholarly literature and challenge the commercialised publishing paradigms have arisen over the last thirty years. The new opportunities arise from the spread of the Internet, the invention of the World Wide Web and associated technologies, and the growing sophistication and transparency of these freely accessible digital systems, facilitated by the decreasing costs of information technology infrastructure.

The open access movement is a response to the strains experienced by the scholarly publishing system at a time when research and scholarship has multiplied many times over and spread to all corners of the globe. The papers which the savants of the eighteenth century sought to efficiently distribute among each other in Europe, and to a limited extent in other parts of the world, have multiplied and metamorphosed into the thousands of journals which inform and record the work of ever more specialised researchers.

While the open access movement has essentially been concerned with access to scholarly literature, its techniques and initiatives hold promises to assist other areas of interest and library operation. Some programs, such as that of BioMed Central (http://www.biomedcentral.com), are already providing benefits to colleagues in the least developed countries. But the benefits are not only for those in developing countries. For example, the creation of freely accessible publications, including *Portal:*

*a multidisciplinary journal of international studies* (http://epress.lib.uts.edu.au/journals/portal), which is produced by our own UTSePress, offers scholarship without charge to anyone who might be interested, within or without the academy.

**Varied understandings of open access**

Thus, open access is delivering high quality research literature through digital libraries and by direct access. But it is clear that there are various uses of the term "open access" which extend from the narrow to the broad. Perhaps the most widely accepted definition of an open access publication is the specification that it should satisfy the following two conditions:

1. The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual (for the lifetime of the applicable copyright) right of access to, and a licence to copy, use, distribute, perform and display the work publicly and to make and distribute derivative works in any digital medium for any reasonable purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use.

2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving.

This definition has been taken from *A position statement by the Wellcome Trust in support of open access publishing* (http://www.wellcome.ac.uk/en/1/awtvispolpub.html) and was based on the definition arrived at by delegates who attended a meeting on open access publishing convened by the Howard Hughes Medical Institute in July 2003. The document adds that an open access publication is a property of individual works, not necessarily of journals or of publishers. It suggests that the standards of the scholarly communities, rather than copyright law, will provide the mechanism for enforcement of proper attribution and responsible use of the published work. In other words, it suggests that the vital moral rights to integrity and attribution will be protected by good scholarly practice, especially the avoidance of misrepresentation and plagiarism, rather than through regulation.

This definition displays two key elements: permissions by the authors or copyright holders to enable universal personal use and lodgement of the works in a freely accessible online repository which will seek to guarantee access. So one offers the licence to all, the other a mechanisms for making copies available – but not necessarily an effective means of access, as I shall discuss in a moment.

Turning this proposal into reality has taken a number of paths.

Stevan Harnad argues that the desired result can be achieved by all authors depositing in institutional or disciplinary repositories copies of their works or, if necessary, slightly modified copies of their works to get around the requirements to assign copyright which have been imposed by many publishers (although this is changing under pressure from the open access movement). He proposes that this mechanism will enable authors to choose to publish in free of charge open access journals or 'toll access' journals but, either way, to ensure that their articles will be available free of charge. This offers a powerful transitional strategy which, coupled with the work of Creative Commons and others to develop more balanced publishing contracts, has dramatically hastened the pace of change.

However, the variety of models of institutional repositories, the lack of consideration by many for the onerous implications of preservation in perpetuity, and the rush to populate them with preprints or even drafts, risks sacrificing the quality control which peer reviewed journals have traditionally offered to scholarly literature. I have a nightmare that we will soon see overflowing repositories of materials of variable quality with little and inconsistent metadata kept in ageing storage formats which we will be seeking to search via federated search mechanisms. Our records of scholarship will have become a Babel in which it will be impossible to distinguish well conducted research from dross and the tendentious utterances of pseudo researchers such as the mendacious Holocaust deniers.

This approach intentionally undermines the economic structure of scholarly publishing by making the works available to all connected to the Internet without securing any revenue. This is a strategy to counter the commodification of scholarly publishing by the transfer of control of the most prestigious publications to major commercial publishing houses such as Elsevier and Blackwell. It seeks to put aside the very real costs of publishing articles which has been estimated to be of the order of USD2750 per article for a good to high quality subscription journal (Wellcome Trust 2004) to which must be added a contribution to profit and of course the original costs of preparing the articles which are borne by the authors or institutions with which they are associated. In doing this, it minimises the significance of the value added at each stage of the publication process including quality assurance, gathering together of articles in similar fields of inquiry or sometimes on the same issue, presentation in a readable format, subediting, inclusion in reference indexes and databases.

Thus, the reliance on institutional repositories to ensure unrestricted access to scholarly information presents a danger to quality assurance and minimises the value added by an effective publication process. An alternative approach, which recognises the need for a revenue stream to meet the costs of these activities and even to return a profit to the publishers, has been the proposal to replace subscription based peer reviewed journals with author fee based models. As discussed in a recent Wellcome Trust report (*Ibid*), this could involve a publication fee of the order of USD500-USD2500 or a combination of submission and publication fees of about USD175 and USD550 respectively. The report recommends this approach, identifying only one serious danger, exclusion of the indigent scholar. It suggests that this might be addressed by providing unspecified

support for authors from developing countries who might be unable to pay submission or publication charges. However, a greater danger lies in the effective conversion of the system of scholarly publication into vanity publishing in which articles are published because their authors can meet the fees rather than because of their scholarly merit.

Another alternative, which has been adopted by the publishers of the journals affiliated with SPARC, and by UTSePress, is for non profit organisations to publish nil or low cost but high quality journals such as *Portal*, mentioned above. This approach depends on the willingness of the organisations to underwrite the cost of publication as an element of their contributions to scholarship and the maintenance of communities of research and scholarly practice. The costs are not enormous as UTSePress has demonstrated since much of the activity – peer review, editing, writing – is already borne within the academy. It does however demand a commitment for the long haul.

Nevertheless, all of these open access solutions depend on the ready availability of ICTs, especially broadband access to the Internet, good quality IT hardware and up to date software plus the skills to use the infrastructures effectively. Valuable initiatives such as Hinari (the Health InterNetwork led by the World Health Organization - http://www.healthinternetwork.org) and BioMed Central will be nullified without attention to those fundamental infrastructures. This is a big challenge in many countries. It is a challenge for universities and research institutes and even more so for the general public. The shift to digital publication and the open access movement, as generally described in the literature and the models summarised above, is in danger of perpetuating the disadvantage experienced by our colleagues in developing countries, countries in transition and those facing economic dislocation. They might even exacerbate the difficulties by removing the economic basis of ameliorative services such as interlibrary loan document delivery.

**Multi pronged approach**

This discussion demonstrates that the open access movement is making digital libraries more economically viable, effective and possibly efficient but is not sufficient if we are to meet the scholarly information needs of the global community. There are many others areas of concern which I have mentioned above. Solutions which will address those concerns must be multi pronged and must adopt a wider understanding of "open access". This is the traditional library understanding of open access, that is the removal of barriers to direct use of the literature by clients, taken to the digital world. It draws its traditions from the opening up of library shelves which gained momentum in the USA at the end of the nineteenth century (Thomison 1978, p. 42).

This broader understanding of "open access" has been recognised in the *IFLA Statement on Open Access to Scholarly Literature and Research Documentation* (IFLA 2003 – see Appendix). IFLA emphasises the vital importance of comprehensive open access to scholarly literature and research documentation for the understanding of our world and to the identification of solutions to global challenges and particularly the reduction of information inequality. It notes that open access guarantees the integrity of the system of scholarly communication by ensuring that all research and scholarship will be

available in perpetuity for unrestricted examination and, where relevant, elaboration or refutation. In doing this, IFLA takes account of the roles played by all involved in the process of scholarly publication including authors, editors, publishers, libraries and institutions. It proposes the adoption of strategies which will implement principles to do with:

- moral rights;
- effective peer review;
- opposition to censorship;
- succession to the public domain;
- measures to assist disadvantaged researchers and scholars including those in developing nations and the disabled;
- support for open access publishing; and,
- preservation and perpetual availability, useability and authenticity.

**Conclusion: can we deliver digital libraries without open access?**

The IFLA Statement proposes a big agenda which will require us all to contribute, some will do so by initiating open access publications, such as we have done with UTSePress, others by choosing wisely and arguing persuasively when we are negotiating contracts for digital publications. All of us can encourage governments and international bodies to work to reduce the digital divide and information inequality. There is much to be done but, to return to the question posed in the title of this paper, it is clear that open access is integral to delivering digital libraries.

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**APPENDIX**

## IFLA STATEMENT ON OPEN ACCESS TO SCHOLARLY LITERATURE AND RESEARCH DOCUMENTATION

IFLA (the International Federation of Library Associations and Institutions) is committed to ensuring the widest possible access to information for all peoples in accordance with the principles expressed in the Glasgow Declaration on Libraries, Information Services and Intellectual Freedom.

IFLA acknowledges that the discovery, contention, elaboration and application of research in all fields will enhance progress, sustainability and human well being. The peer reviewed scholarly literature is a vital element in the processes of research and scholarship. It is supported by a range of research documentation which includes preprints, technical reports and records of research data.

IFLA declares that the worldwide network of library and information services provides access to past, present and future scholarly literature and research documentation; ensures its preservation; assists users in discovery and use; and offers educational programs to enable users to develop lifelong literacies.

IFLA affirms that comprehensive open access to scholarly literature and research documentation is vital to the understanding of our world and to the identification of solutions to global challenges and particularly the reduction of information inequality.

Open access guarantees the integrity of the system of scholarly communication by ensuring that all research and scholarship will be available in perpetuity for unrestricted examination and, where relevant, elaboration or refutation.

IFLA recognises the important roles played by all involved in the recording and dissemination of research, including authors, editors, publishers, libraries and institutions, and advocates the adoption of the following open access principles in order to ensure the widest possible availability of scholarly literature and research documentation:

1. Acknowledgement and defence of the moral rights of authors, especially the rights of attribution and integrity.

2. Adoption of effective peer review processes to assure the quality of scholarly literature irrespective of mode of publication.

3. Resolute opposition to governmental, commercial or institutional censorship of the publications deriving from research and scholarship.

4. Succession to the public domain of all scholarly literature and research documentation at the expiration of the limited period of copyright protection provided by law, which period should be limited to a reasonable time, and the

exercise of fair use provisions, unhindered by technological or other constraints, to ensure ready access by researchers and the general public during the period of protection.

5. Implementation of measures to overcome information inequality by enabling both publication of quality assured scholarly literature and research documentation by researchers and scholars who may be disadvantaged, and also ensuring effective and affordable access for the peoples of developing nations and all who experience disadvantage including the disabled.

6. Support for collaborative initiatives to develop sustainable open access* publishing models and facilities including encouragement, such as the removal of contractual obstacles, for authors to make scholarly literature and research documentation available without charge.

7. Implementation of legal, contractual and technical mechanisms to ensure the preservation and perpetual availability, useability and authenticity of all scholarly literature and research documentation.